E & A

Vol. 9. Part 7. Pp. 113-128. 15th July, 1940.

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OF THE

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

Series B.

TAXONOMY

(being the continuation of Stylops)

World List abbreviation: *Proc. R. ent. Soc. Lond.* (B)

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LONDON:

PUBLISHED BY THE SOCIETY AND

SOLD AT ITS ROOMS, 41, QUEEN'S GATE, S.W.7

Price 3s. 0d.

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A SYNOPSIS OF THE GENUS *MACRONYCHUS* MÜLLER (COLEOPTERA, ELMIDAE)

By H. E. Hinton, Ph.D., F.R.E.S.

(*Department of Entomology, British Museum (Natural History).*)

There are two [1] known species of *Macronychus* Müller, one widely distributed in Europe and the other in the eastern part of the United States. A third species, occurring in India, is described in this paper, and the opportunity is taken of re-describing the genus to bring it into line with modern generic descriptions. The European and American species have been described many times, and are now so well known to every collector that it is not necessary to re-describe them here.

For notes on the biology and early stages of the species papers by Pérez (1862), West (1929), Segal (1933), and Bertrand (1936) should be consulted.

I have to thank Dr. P. N. Musgrave for a series of *M. glabratus* Say preserved in alcohol and Miss O. F. Tassart for figure 14. Other illustrations were drawn by myself with the aid of a camera lucida; lines next to figures refer to a length of 0·20 mm., unless otherwise indicated.

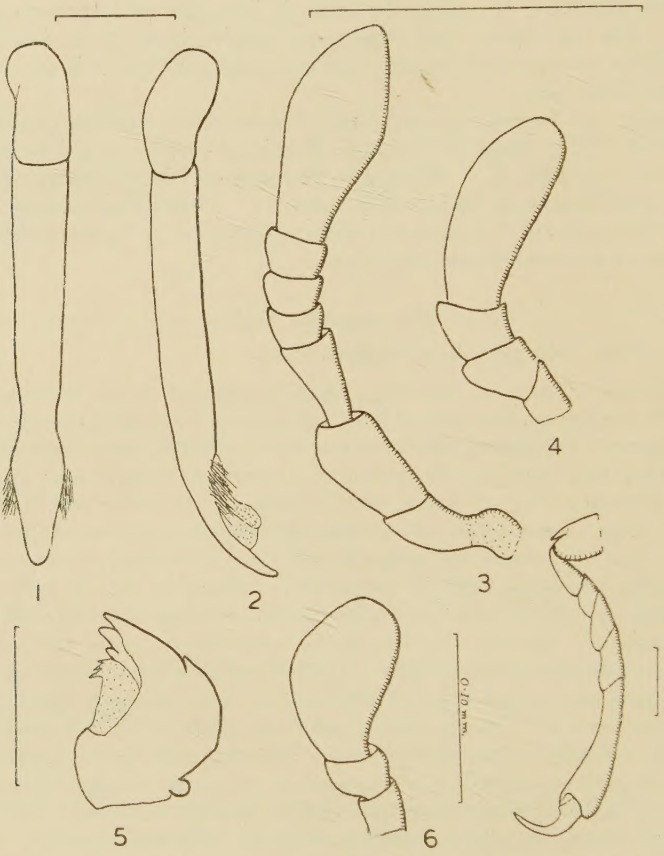
Macronychus Müller.

Macronychus Müller, 1806, *Illig. Mag. Insektenk.* **5**: 207.

Body obovate. Hairy or scale-like tomentum confined to the following areas: (1) genae and, in one species, also front of head; (2) sides of elytra between sublateral carinae and inner margins of epipleura, this tomentose band extending beyond apices of sublateral carinae to attain apex of elytra; (3) epipleura; (4) nearly all of hypomera; (5) sides of pro-, meso-, and metasternum; (6) nearly all of abdominal sternites; and (7) nearly all of femora and tibiae. Inner apices of all tibiae more densely and coarsely tomentose than elsewhere. *Head* when seen from below capable of being retracted so that none of mouth-parts is visible. Antennae (fig. 3) 7-segmented. Mandible (fig. 5) with three apical subacute teeth; prostheca moderately large, entirely membranous, and with a few apical spine-like processes. Maxilla with palp (fig. 4) 4-segmented; galea and lacinia separate and apex of each densely spinose or hairy. Labium with palp (fig. 6) 3-segmented; mentum transverse, about as long and broad as submentum. Gula anteriorly about half as broad as submentum, narrowed towards middle, and from middle feebly broadened to posterior margin which is slightly broader than anterior. *Pronotum* with anterior margin moderately strongly arcuate and on each side behind eye before apical angle broadly, moderately deeply sinuate or very shallowly sinuate; posterior margin broadly, moderately deeply sinuate on each side and middle opposite scutellum truncate to moderately narrowly and strongly rounded. Sublateral carinae present on basal half to basal three-fifths; without distinct impressions or with a deep, complete, transverse impression on apical half. *Elytra* striate and punctate; each elytron with a prominent carina on ninth interval. Hind-wing (fig. 15) without a radial cross vein or an anal cell; first anal absent; second anal long and without branches; third anal absent; fourth anal well-developed; and cubito-anal cross vein absent. Hind-wings sometimes reduced to scale-like rudiments. *Prosternum* (figs. 11 and 13) long in front of anterior coxae; prosternal process long and broad. Mesosternum with a deep and broad groove for the reception of prosternal process. Abdomen with middle basal margin of first sternite broad. *Legs* with visible portion of front coxae large

[1] *Macronychus simplex* Hinton must be transferred to the genus *Zaitzevia* Champion.

and globular; front trochantin completely concealed by sternum and hypomera. Claws (fig. 7) without teeth. *Alimentary canal* (fig. 8) with six caeca on anterior margin of mid-gut. Hind gut with four Malpighian tubules which end freely in body cavity near rectum. *Male reproductive system* (fig. 12) with two sperm tubes to each testis; without special vesiculae seminales; accessory glands simple, not lobed. *Female reproductive system* (fig. 10) with about 12 egg tubes to each ovary; spermathecal duct opening near apex of bursa copulatrix; without an accessory gland associated with spermatheca. *Central nervous system* with three discrete thoracic ganglia; first abdominal ganglion partly fused to third thoracic; second and third discrete; and fourth to eighth forming a terminal ganglion, though the limits of fourth, fifth, and sixth are easily distinguishable.

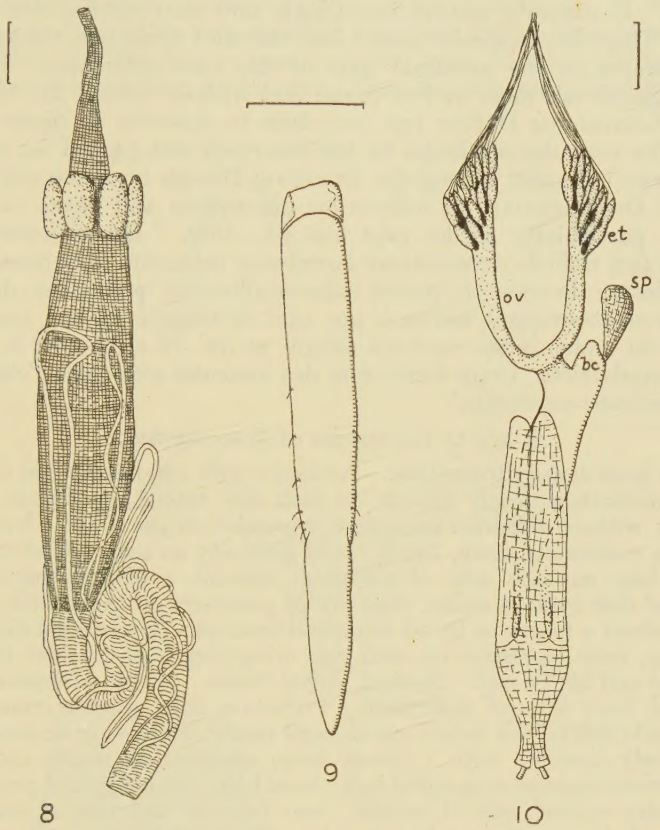


Figs. 1–7.—*Macronychus indicus* sp. n. (1) Dorsal view of male genitalia. (2) Right lateral view of same. (3) Antenna. (4) Maxillary palp. (5) Ventral view of left mandible. (6) Labial palp. (7) Hind tarsus.

Genotype: Macronychus quadrituberculatus Müller, 1806 (by monotypy).

Of the known genera of Elmidae, *Macronychus* is probably most closely related to *Zaitzevia* Champion (1923), and, like the latter, has the number of antennal segments and the basal piece of the male genitalia reduced. From *Zaitzevia*, however, it may be distinguished as follows: (1) the antennae are seven instead of eight segmented; (2) each elytron has the ninth interval elevated to form a sublateral carina, whereas in *Zaitzevia* there are three

sublateral rows of granules on each elytron; and (3) the hind-wing when fully developed has the second anal unbranched and the third anal absent, whereas in *Zaitzevia* the second anal is branched and the third anal is present though short.



FIGS. 8–10.—*Macronychus glabratus* Say. (8) Alimentary canal. (9) Dorsal view of male genitalia. (10) Female reproductive system. (bc) Bursa copulatrix. (et) egg tube. (ov) Oviduct. (sp) Spermatheca.

In his paper on the internal anatomy of *M. quadrituberculatus*, Dufour (1835) has pointed out that there are six caeca on the anterior margin of the mid-gut. Six specimens of *M. glabratus* Say were examined for this character, and all were found to have six caeca. It has been shown by me (1939, 1940a) that the number of caeca on the anterior margin of the mid-gut is not always a reliable generic character in the family ELMIDAE, but, on the contrary, the number may sometimes be a good specific character. In some instances the number of caeca varies among individuals of the same species (Hinton, 1940b). Dufour (*op. cit.*) says there are two Malpighian tubules, both of which have their distal ends inserted in the hind gut near their point of origin. This description is entirely incorrect. All known Coleoptera have either four or six Malpighian tubules which end freely in the body cavity or have their distal ends imbedded in the walls of the hind gut. In the ELMIDAE the Malpighian tubules always end freely in the body cavity, generally near the rectum. The usual number of tubules in this family is six, but both *Neoelmis* Musgrave and *Macronychus*

have only four, and according to Dufour (*op. cit.*) *Stenelmis* and *Latelmis* also have only four.

Each testis has two sperm tubes, which vary greatly in size, shape, and position in the body cavity, according to the degree of sexual maturity of the individual. In sexually mature individuals they may extend into the mesosternum. There are no special pocket-like vesiculae seminales, the sperm being probably stored in the proximal ends of the vasa deferentia. The lateral accessory glands are more or less round and without lobes. In his study of *M. quadrituberculatus* Dufour (*op. cit.*) fails to describe or figure accessory glands. The vesiculae seminales he has described and figured for this species are of a type unknown among the ELMIDAE, though he knew they occurred among the DERMESTIDAE. I believe his description and figure to be purely imaginary, particularly as he says (*op. cit.* : 168), "Les *vésicules séminales* dont il est fort difficile de constater l'existence ne m'ont paru consister qu'en un seul faisceau de trois ou quatre bourses allongées, pellucides, diversement conturnées et aboutissant toutes à une tige ou tronc commun, que est assez long, plus ou moins renflé vers son origine et qui va s'enfoncer à la base de l'armure copulatrice. Cette forme rare des vésicules séminales s'observe aussi dans le *Dermestes tessellatus*."

A key to the species of *Macronychus*.

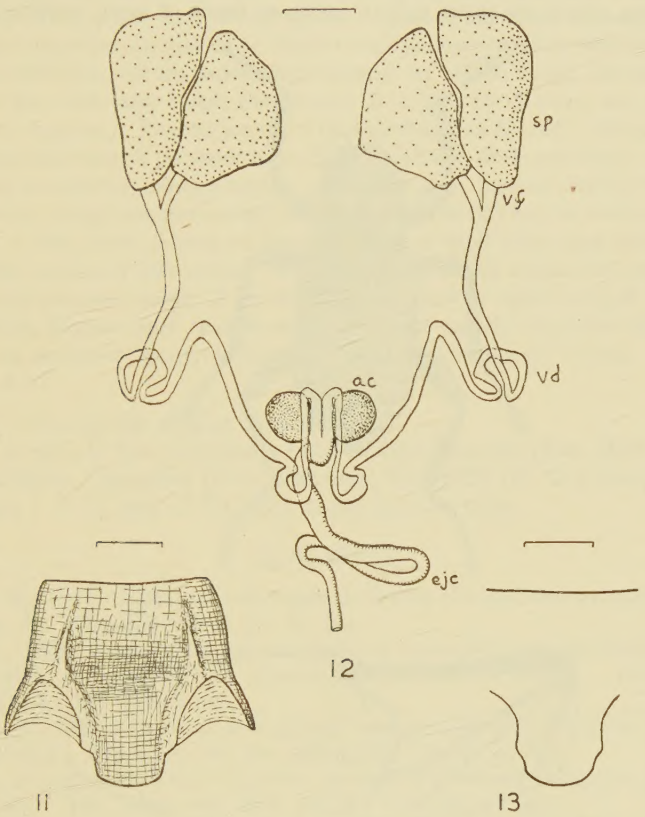
1. Front of head densely tomentose. Pronotum with anterior margin broadly and moderately deeply sinuate on each side behind eye before apical angle; without a distinct transverse impression on apical half; basal half with a moderately small, feebly raised gibbosity on each side of middle; near base on each side of scutellum without a distinct impression. Elytral disk without striae; first row of punctures on basal third of disk only about a fourth as broad as sutural interval. Metasternal disk with a deep, oval depression on each side occupying most of sides between middle and hind coxae. Eastern United States . *M. glabratus* Say, 1825.

–. Front of head without tomentum. Pronotum with anterior margin on each side behind eye before apical angle nearly truncate or at most only shallowly sinuate; with a broad, deep, complete or nearly complete, transverse impression on apical half; basal half with a large and prominent gibbosity on each side of middle; near base on each side of scutellum with a shallow or deep oval impression. Elytral disk with distinct striae; first row of punctures on basal third half as broad to as broad as sutural interval, never less than a third as broad. Metasternal disk on each side without a large depression though sometimes with a few very broad punctures . . . . . 2.

2. Elytra with a very prominent and broad gibbosity on third interval near base; discal strial punctures on basal third never as broad and usually not more than half as broad as sutural interval. Metasternal disk on each side usually without punctures, occasionally with one or two punctures which are distinctly narrower than base of hind tibia. Abdomen with carinae of first sternite only moderately prominent and rarely extending to posterior margin. Europe
M. quadrituberculatus Müller, 1806.

–. Elytra with third interval near base only slightly more convex than adjacent intervals; discal strial punctures on basal third usually as broad or slightly broader than sutural interval, rarely only half as broad. Metasternal disk on each side with two or three deep punctures which are as broad as base of hind tibia. Abdomen with carinae of first sternite very prominent and extending slightly beyond posterior margin. India
M. indicus sp. n.

Each ovary of *M. glabratus* has twelve egg tubes. Dufour records ten to twelve egg tubes for each ovary of *M. quadrituberculatus*. The spermatheca (fig. 10) is a simple, club-shaped structure opening into the bursa copulatrix near the latter's apex. According to Dufour there is no accessory gland associated with the spermatheca, and this appears to be the case in *M. glabratus*. Six specimens of the latter were carefully examined, but no trace of an accessory gland was found. The female reproductive system of about thirty genera of ELMIDAE has been studied, and in all of these an accessory gland was present.



FIGS. 11–13.—(11) Ventral view of prosternum of *Macronychus glabratus* Say. (12) Male reproductive system of same. (ac) Accessory gland. (ejc) Ejaculatory duct. (sp) Sperm tube. (vd) vas deferens. (vf) vas efferens. (13) Ventral view of prosternum of *M. indicus* sp. n.

In the Coleoptera an accessory gland is nearly always associated with the spermatheca, only a few, *e.g. Cicindela* (Stein, 1847), having no accessory gland.

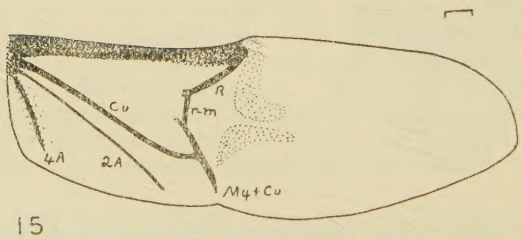
The hind-wings of eight specimens of *M. indicus* sp. n., were examined, and those of two males and three females were found to be fully developed, while those of one male and two females were very much reduced and did not extend beyond the first abdominal tergite. Dufour (1835, p. 154) has recorded both fully winged and brachypterous forms of *M. quadrituberculatus*. Segal (1933) says that all the specimens of *M. glabratus* examined by him had very

much reduced hind-wings, and this proved to be the case with six of seven specimens examined by me, the seventh having fully developed wings.

Macronychus indicus sp. n.

(Figs. 1–7, 13–15.)

Male : Length, 2·74 mm.; breadth, 1·15 mm. Cuticle shining, black; antennae and mouth-parts brownish-testaceous; most of ventral surface and legs rufo-piceous. *Head* without distinct impressions; surface of front densely, frequently confluently punctate with punctures which are about half as coarse as facets of eyes; surface behind front



Figs. 14–15.—*Macronychus indicus* sp. n. (14) Dorsal view of whole insect. (15) Hind-wing. Venation after Forbes.

similarly but more sparsely punctate and also with a few shallow punctures which are as coarse as facets of eyes. Clypeus with fronto-clypeal suture deep, distinct, and so formed that anterior margin of head is shallowly, arcuately emarginate for entire breadth; anterior margin nearly truncate and angle on each side broadly rounded; surface with punctures half to two-thirds as coarse as facets of eyes and usually separated by one to two diameters. Labrum with anterior margin nearly truncate and angle on each side very broadly rounded; basal and anterior third feebly alutaceous, without distinct punctures; middle third with numerous setiferous punctures. *Pronotum* with broadest point, which is at about basal third, not as broad as long (0·84 mm. : 0·93 mm.) and base broader than apex (0·82 mm. : 0·57 mm.). Shape, impressions, and sublateral carinae as figured (fig. 14). Disk

with round punctures about two-thirds as coarse as facets of eyes and usually separated by one to two diameters; along anterior margin between these punctures are also numerous much finer ones; bottom of impressions, middle of disk, and basal part of sublateral carinae with the punctures frequently confluent so that surface often appears rugulose. *Elytra* twice as long as pronotum (2·0 mm. : 0·93 mm.) and with broadest point across humeri about as broad as broadest point across apical third (1·15 mm.). Sublateral carinae moderately prominent and extending to a point opposite anterior part of fourth abdominal sternite. Intervals feebly convex, third distinctly more strongly convex than others; surface of intervals feebly and irregularly alutaceous, with numerous microscopic punctures and with a few fine, low granules. Striae everywhere distinct, moderately shallow; strial punctures on disk deep, round to subquadrate, slightly narrower to slightly broader than intervals, and separated longitudinally by half to nearly one diameter.

Scutellum flat, subovate, longer than broad (0·15 mm. : 0·12 mm.), and surface very finely, densely rugulose. *Prosternum* (fig. 13) with shape as figured. Metasternum with median longitudinal line on posterior three-fifths broad and deep, anteriorly narrower and not extending to anterior margin; surface of disk densely, microscopically, longitudinally asperate but also along posterior margin of middle coxal cavity and on each side of middle of disk with a few coarse (about as broad as base of hind tibia) and deep punctures. Abdomen with carinae of first sternite very prominent, broad, subparallel, and extending slightly beyond anterior margin of second sternite; middle region of first sternite with round punctures slightly finer than facets of eyes and usually separated by one to two diameters; all sternites densely tomentose except middle region of first. *Genitalia* as figured (figs. 1–2).

Female : Externally similar to male.

Type : A male in the collection of the British Museum (Nat. Hist.). INDIA : United Provinces, Chakrata Divn., Jaunsar, 13.v.1929 (*H. G. Champion*).

Paratypes : 5 ♂♂ and 13 ♀♀ with same data as type.

REFERENCES.

BERTRAND, H., 1936, Captures et élevages de larves Coléoptères aquatiques. *Ann. Soc. ent. Fr.* **105** : 213–238, 1 pl., 44 figs.

DUFOUR, L., 1835, Recherches anatomiques et considérations entomologiques sur les insectes coléoptères des génres Macronique et *Elmis*. *Ann. Sci. nat. (Zool.)* (2) **3** : 151–174, 2 pls.

HINTON, H. E., 1939, On some new genera and species of neotropical Dryopoidea (Coleoptera). *Trans. R. ent. Soc. Lond.* **89** : 23–45, 54 figs.

——, 1940a, A synopsis of the Brazilian species of *Neoelmis* Musgrave (Coleoptera, ELMIDAE). *Ann. Mag. nat. Hist.* (11) **5** : 129–153, 17 figs.

——, 1940b, A monograph of *Gyrelmis* gen. n., with a study of the variation of the internal anatomy (Coleoptera, ELMIDAE). *Trans. R. ent. Soc. Lond.* **90.**

MÜLLER, P. W. J., 1806, *Macronychus*, Krallenkäfer. Eine neue Käfergattung, mit der Beschreibung einer neuen Art von Hakenkäfer, *Parnus*. *Illiger Mag. Insektenk.* **5** : 207–220.

PÉREZ, A., 1863, Histoire des métamorphoses du *Macronychus quadrituberculatus* et de son parasite. *Ann. Soc. ent. Fr.* **3** : 621–636, 1 pl.

SAY, T., 1825, Descriptions of new species of coleopterous insects inhabiting the United States. *J. Acad. nat. Sci. Philad.* **5** : 160–204.

SEGAL, B., 1933, The hind-wings of some DRYOPIDAE in relation to habitat (Coleop.). *Ent. News*, **44** : 85–88, 1 pl.

STEIN, F., 1847, *Vergleichende Anatomie und Physiologie der Insecten.* 1. *Die Weiblichen Geschlechtsorgane der Käfer.* Berlin. 1–139, 9 pls.

WEST, L. S., 1929, The behavior of *Macronychus glabratus* Say (Coleo. : HELMIDAE). *Ent. News*, **40** : 171–173.

REDEFINITIONS AND SYNONYMY OF SOME GENERA OF AMBER FUNGUS-GNATS (DIPTERA, MYCETOPHILIDAE)

By F. W. Edwards, F.R.S.

The fungus-gnats (Mycetophilidae) form one of the largest constituent groups of the abundant insect fauna of Baltic Amber, and as the publications of Meunier have shown, the species are very similar to those of the present day. Meunier introduced numerous new genera for some of the fossil species, but some of them have since been found to be synonymous with recent genera, while several others have still living representatives which were not recognised till after the fossils were described. The same may be true of others of the fossil genera, and any generic revision of recent Mycetophilidae should therefore take account of the amber forms. As a contribution towards such a revision I am now giving some additional information regarding the genotypes of a number of Meunier's genera. Most of this information was obtained during a visit to Königsberg in 1933, when with the kind assistance of Dr. Elizabeth Skwarra I was able to examine many of Meunier's types; subsequently Dr. A. Keilbach of the Königsberg Museum kindly sent me for study several further types which could not be found at the time of my visit.

Meunier's descriptions seldom mentioned such important details as the position of ocelli, hairs on the pleurae, and trichiation of the wings, all of which characters have been found to be important for generic differentiation. In most of the better-preserved fossils, however, these characters are as clearly visible as in fresh balsam mounts of existing species.

The amber fungus-gnats are all referable to recent subfamilies and tribes, and the classification outlined by me in 1924 and adopted by Landrock (1927) proves equally well adapted to recent and fossil forms; the genera are here arranged according to that classification. It is interesting to note that in fossil as in recent forms the presence or absence of a small "Sciophiline Cell" bounded by the short vein *R*4 is not a reliable generic distinction and in several cases is not even constant for a species. This was not recognised by Meunier, who distinguished his genus *Palaeoempalia* from *Boletina* chiefly by the presence of this cell. I find, however, that *Boletina anacliniformis* Meunier is simply a specimen of *Palaeoempalia crassipes* Meunier with *R*4 missing, while under *Boletina fimbriata* Meunier had included similar aberrant specimens of his *Syntemna elongata*, *Empalia subtriangularis*, *Palaeoempalia brockii*, and perhaps *P. succini*. Species of the tribe Gnoristini are particularly numerous; many genera are involved, the distinctions between these and between recent genera of the tribe being often unsatisfactory.

Sciophilinae.

Sciophilini.

Anaclileia Meunier, 1904.

Founded for four supposed species, of which *A. anacliniformis* Meun. was designated as the genotype by Johannsen. I could not find the specimens of

this species in Königsberg, but the types of the other three (*sylvatica* Meun., *gazagnairei* Meun., and *dissimilis* Meun.) are all present and are probably specimens of one and the same species, the antennal differences being sexual. They show the following characters :—

Lateral ocelli remote from eyes and rather small. Pleurotergites hairy; postnotum conspicuously hairy towards base of abdomen. Tibial setulae irregular. Wing-membrane with small dense macrotrichia (as well as microtrichia) on at least the distal half.

These features, as well as those of venation (already described by Meunier), agree with the recent genus *Paraneuratelia* Landrock, 1911, which must now be placed as a synonym **syn. n.**

Proanaclinia Meunier, 1904.

Proposed for *P. giebeli* Meun. and *P. gibbosa* Meun.; the former appeared to be missing from the Königsberg collection, but the latter was found and may be taken as the genotype.

Characters of thorax, wings, legs and ocelli as in the recent genus *Neuratelia* Rond., of which *Proanaclinia* would appear to be a synonym (as suggested by Johannsen). In *P. gibbosa Sc* is present but faint, costa slightly produced, *M*1 complete; the last point is the only obvious difference from recent species of *Neuratelia*, but it is clearly of no great significance as *P. giebeli*, according to Meunier's figure, agrees with recent species in having *M*1 incomplete.

Gnoristini.

Sciobia Loew, 1850.

Palaeocmpalia Meunier, 1897.

The very brief diagnosis given by Loew for his genus *Sciobia* shows that he intended it to include all amber Sciophilinae with *Sc* reaching costa and *R*4 present, *i.e.* species of *Sciophila* and *Mycomyia* (both of which genera occur in amber), and also the species later placed by Meunier in *Palaeoempalia*. Johannsen thought *Sciobia* might be identical with *Mycomyia*, but took no action in the matter. I prefer to suppose that *Sciobia* is the same as *Palaeoempalia*, as this will save the risk of having to change the name of *Mycomyia*, a genus which contains numerous recent species. Species of *Palaeoempalia* are more numerous in amber than *Mycomyia*, and Loew doubtless knew some of them; he named but did not describe in detail two species (*S. quadrangularis* and *spinosa*) with strong bristles on the tibiae, and one of these may well have been Meunier's *Palaeoempalia brogniarti*, which is the only *Palaeoempalia* among those which I have examined which has the tibial bristles long, strong and black. I suggest that *S. spinosa* Loew be assumed to be the same as *P. brogniarti* and taken as the type of *Sciobia*. *P. brogniarti* has already been chosen by Johannsen as type of *Palaeoempalia*, so that this name will now become a synonym of *Sciobia* **syn. n.**

I examined four males of *P. brogniarti* in Königsberg, as well as a fifth specimen so labelled which represents another allied species; the type of the species may be taken as no. 2451. There is also a good male specimen in the Geological Department of the British Museum. The following features can be made out in the specimens :—

Lateral ocelli at a distance less than their own diameter from the eyes, which are rather large and emarginate above the antennae. Mesonotum with long and rather dense bristly hair; pleurotergites and postnotum bare. Abdomen with eighth segment scarcely visible, seventh small, and even the sixth much shorter than the fifth. Hypopygium broad, with large coxites and tergite and long simple styles, remarkably similar to that of the recent *Boletina erythropyga* Holmgr. (*sahlbergi* Lundst.). Tibial setulae irregular; longest bristles on hind tibia nearly twice the tibial diameter; no distinct hind tibial comb; no sexual modification of front tarsi or middle tibiae; claws each with a single strong tooth, all similar in size. (I think small empodia are present in the British Museum specimen, but cannot be certain; unfortunately I failed to note the presence or absence of these structures in the Königsberg specimens.) Wing-membrane with fine microtrichia only; *Sc* setose except near base; forks of *M* and *Cu* also shortly setose. Venation as already figured by Meunier and Johannsen.

Most of the other species referred by Meunier to *Palaeoempalia* differ in some details and are perhaps not congeneric with *P. brogniarti*; they may belong to *Palaeoboletina* (see below). The correct location of the recent European *P. collaris* Mg. (*stylifera* Grzeg.) is also questionable.

Palaeoboletina Meunier, 1904.

Proposed for *P. elongatissima* Meun. (which may be taken as the genotype) and *P. grandis* Meun. Both are missing from the Königsberg collection. The genus was placed by Johannsen as a synonym of *Boletina*, but I think this unlikely. Meunier's figure of the wing suggests that *P. elongatissima* may be a species related to his *Palaeoempalia crassipes*, or possibly even a specimen of that species lacking vein *R*4. Assuming that this is so, the genus *Palaeoboletina* could be regarded as including most of the species referred by Meunier to *Palaeoempalia* and *Boletina*, and defined as having ocelli and eyes as in *Sciobia* (*Palaeoempalia*) but without macrotrichia on forks and with hypopygium resembling that of *Synapha*. These species cannot well be referred to *Boletina*, which has a different type of hypopygium and *Sc*2 near middle instead of near tip of *Sc*.

Palaeoanaclinia Meunier, 1904.

Proposed for three species of which Johannsen designated *P. distincta* Meun. as type. The type male of *P. distincta* shows the following features :—

Lateral ocelli touching eyes, which are large and emarginate above antennae as in *Palaeoempalia*. Pleurotergites and postnotum bare. Tibial setulae irregular; bristles long and black. Front tarsi with spines on second and third segments. Wings without macrotrichia on membrane or forks; *Sc*2 absent; stem of median fork rather short; *fCu* well before *rm*.

The recent species referred here by Johannsen are not congeneric, but belong to the genus *Boletina*. *P. curvipetiolata* Meun. also differs generically; it has the ocelli well removed from the eyes. The absence of *Sc*2 in the type *P. distincta* may be merely an individual anomaly, and the genus *Palaeoanaclinia* may prove to be the same as *Palaeoboletina*.

Proboletina Meunier, 1904.

Proposed for *P. syntemniformis* Meun. The type ♀ in Königsberg (no. 4055) and a male (unnumbered) show the following features :—

Lateral ocelli touching eyes, which are very slightly emarginate above antennae. Palpi 3-segmented, first about twice as long as broad, second twice as long as first but more slender, third longer than first two together and very slender. Postnotum and pleurotergites bare. Abdomen of ♂ with 6 distinct segments before hypopygium, 6th not long. Hypopygium elongate with small terminal styles. Tibial setulae irregular; no obvious combs; mid tibia of ♂ with sensory patch. Claws with sub-basal tooth; empodium rudimentary. Wings without macrotrichia on membrane or forks. Venation as in *Synapha*: *Sc*2 near tip of *Sc*; median fork with rather long stem; *fCu* just beyond *rm*.

Palaeophthinia Meunier, 1904.

Proposed for *P. aberrans* Meun. The type ♀ in Königsberg shows all the characters of a typical *Coelosia* :—

Lateral ocelli small and remote from eyes. Pleurotergites bare and rather flat; postnotum also bare. Legs moderately long; tibial setulae irregular, bristles few and short; front basitarsus equalling tibia in length. Wings without macrotrichia on membrane or forks; *Sc*2 absent; *rm* very long.

The name *Palaeophthinia* falls as a synonym of *Coelosia* **syn. n.**

Archaeboletina Meunier, 1904.

Proposed for *A. tipuliformis* Meun. The type ♂ (no. K. 4232) and one other specimen in Königsberg are slender insects much resembling the recent *Speolepta leptogaster* (Winn.). The following features may be noted :—

Lateral ocelli remote from eyes. Palpi with third (last) segment very long. Postnotum and pleurotergites bare, latter not prominent. Scutellum with two bristles. Abdomen long and slender, but segments VII and VIII both small, together not longer than VI. Hypopygium with large and somewhat pointed tergite, style simple, terminal, bristly, coxites only narrowly connected at base. Front tarsi and mid tibiae simple; front basitarsus longer than tibia (4 : 3). Tibial setulae in regular rows except at base, bristles very few and minute. Wings without macrotrichia on membrane or forks. Venation much as in *Speolepta*, but *Sc*2 only slightly before *Rs* and *fCu* almost below instead of beyond *rm*, the fork narrower.

The regularly arranged tibial setulae and the differences in venation noted above will perhaps suffice to distinguish this genus from *Speolepta*, to which it is evidently related. The bare wings and incomplete *Sc* separate it from *Paratinia*.

Dianepsia (Loew 1850) Meunier.

The genotype, *D. hissa* Lw., seems to be a common amber species. I have examined numerous specimens and can add the following details to the published descriptions :—

Lateral ocelli small and well separated from the rounded eyes. Palpi 3-segmented, but last segment not very long. Postnotum and pleurotergite bare. Tibial setulae and microtrichia of wings not in definite rows, though the former are less irregular than usual in this tribe. No macrotrichia on wing-membrane or forks (or with a few at tips of *M*1 and *M*2). Hypopygium small, with large tergite.

The rather short and broad wings with unusually short but complete *Sc* (with *Sc*2 near its tip) characterise this genus, which in general appearance has some resemblance to *Docosia*.

Loewiella Meunier, 1894.

No species were mentioned by Meunier in 1894; from among those described in 1904 Johannsen selected *L. incompleta* Meun. as genotype. The type of *L. incompleta* is a ♀ in Königsberg; although it has a rather shorter *Sc* than the other species of the genus it seems to be related to *L. asinduloides* Meun. and *L. indistincta* Meun., both of which are represented by males; there are also several males of *L. asinduloides* or a closely related species in the British Museum. I base the following description on an examination of all these specimens :—

Lateral ocelli almost touching eyes, which are emarginate as in *Palaeoempalia*. Pleurotergites and postnotum bare. Hypopygium with large broad tergite which extends well beyond the coxites and covers the small styles. Tibial setulae more or less regular on distal half, especially beneath. Hind tibia with conspicuous comb on inner side at tip. Front tarsus of ♂ with short spines on segments 2, 3 and 4; mid tibia with sensory patch. Empodia present but small. Wings with dense microtrichia but no macrotrichia on membrane or forks; stem of median fork at least twice as long as *rm*; *fCu* below *rm*.

L. tenebrosa Meun. is not congeneric with the three species mentioned above as it has the ocelli remote from the eyes and the pleurotergites hairy. The recent species referred by Lundström to *Loewiella* are also not congeneric but belong to the genus *Syntemna* (tribe Sciophilini). The recent genus most resembling *Loewiella* is *Dziedzickia* Johannsen, 1909, but the British species, at least of this genus, show some differences from *Loewiella*, such as the hairy pleurotergites and the simple front tarsi of the male.

Palaeodocosia Meunier, 1904.

Palaeotrichonta Meunier, 1904; *?Sciomorpha* Meunier, 1923.

The names *Palaeodocosia* and *Palaeotrichonta* were introduced for *P. brachypezoides* Meun. and *P. brachycamptites* Meun. respectively; both were described from females which I have examined and find to be not only congeneric but conspecific **syn. n.** Among the characters visible are the following :—

Lateral ocelli moderately large, less than their own diameter from eyes. Pleurotergites hairy. Tibial setulae irregular, bristles short. Short macrotrichia present on forks but not on membrane of wing. *Sc* ending in *R* far before *Rs*; stem of median fork not or but little longer than *rm*; *fCu* well before *rm*.

The genus *Sciomorpha* was introduced for two species which according to the figures have a wing-venation similar to that of *P. brachypezoides* except that *R*4 is present, forming a small cell. There is one such specimen in the Geological Department of the British Museum; it resembles *P. brachypezoides* in most respects and appears to me certainly congeneric if not conspecific. *Sciomorpha* may therefore be quoted provisionally as a synonym of *Palaeodocosia*. A further synonym was perpetrated by Meunier (1922), who suggested an alternative generic name *Paléo-Syntemna* for *P. brachypezoides*.

The recent species *Syntemna alpicola* Strobl, which I have transferred to *Dziedzickia*, and for a close relative of which Dziedzicki (1923) erected the genus *Heteropygium*, has a wing very similar to that of *P. brachypezoides*, and must, I think, be placed in *Palaeodocosia*. Whether the genotype of *Dziedzickia* (*marginata* Dz.) is also congeneric is less certain.

The various genera of amber Gnoristini noted above may be grouped as follows :—

A. Lateral ocelli less than their own diameter from eyes.

a. *Sc* ending in costa.

1. *fCu* before *rm* : *Sciobia, Palaeoboletina, Palaeoanaclinia.*
2. *fCu* beyond *rm* : *Proboletina.*

b. *Sc* ending in *R.*

1. Stem of median fork very short; pleurotergites hairy : *Palaeodocosia.*
2. Stem of median fork longer; pleurotergites bare : *Loewiella.*

B. Lateral ocelli remote from eyes : *Archaeboletina, Coelosia, Dianepsia.*

Leiini.

Proneoglaphyroptera Meunier, 1904.

Proposed for *P. eocenica* Meun., the type ♂ of which I have examined.

Ocelli three, in a straight line, laterals touching eyes which are emarginate above antennae. Pleurotergites bare. Scutellum with two long bristles. Tibial setulae irregular; bristles short; spurs very long and equal. Empodia large. Wings without macrotrichia on membrane or forks. *Sc* ending distinctly in costa, *Sc*2 beyond its middle; *R*1 scarcely twice as long as *rm*, which is about equal to stem of fork; costa reaching half-way from *Rs* to *M*1; *fCu* just before or almost below level of base of *rm.*

P. eocenica appears to resemble the Australian and South American *Paraleia* more than any other recent genus of Leiini, differing in the position of the ocelli.

Willistoniella Meunier, 1904.

Proposed for *W. magnifica* Meun. and described as a Sciarid. The type is missing from the Königsberg collection, but from the figure of the wing, which shows *Sc* long and ending in *R*, and *Cu* forking at base of wing, it seems certain that the species is related to *Tetragoneura*, and may perhaps be the same as *Tetragoneura elongata* Meun., *T. rectangulata* Meun., *T. glabra* Meun., *T. borussica* Meun. or *T. minuta* Meun. All these species, according to my notes, are not typical *Tetragoneura* but belong to the allied genus *Ectrepesthoneura* Enderlein, 1911.

The name *Willistoniella* being pre-occupied, Johannsen (1909) proposed *Meunieria* as a substitute, but Kieffer (in Meunier, 1904) had previously used the name *Meunieria* for an amber Cecidomyiid, and although no adequate description of this insect has been published, Johannsen's *Meunieria* is invalidated by Kieffer's. The correct name for *Willistoniella* Meunier is therefore *Ectrepesthoneura.*

Sciarella Meunier, 1904.

Proposed for *S. mycetophiliformis* Meun., and described as a Sciarid.

I have examined the type ♀ and regard it as a specimen of *Tetragoneura* lacking *R*4, as is the case frequently in recent examples of the genus. *Sciarella* falls as a synonym **syn. n.**

Heeriella Meunier, 1904.

Proposed for *H. bifurcata* Meun., and described as a Sciarid.

I have examined two of Meunier's three cotypes and find them to be similar to *Tetragoneura* in most respects, but the lateral ocelli are much nearer

the eye-margins than usual in this genus (about half their diameter) and *R*1 is slightly shorter instead of longer than *rm*. The species also has some resemblance to *Docosia*, but has *Sc* very short and pleurotergites bare (as in *Tetragoneura*). Abdomen of ♂ of the type of *Tetragoneura*, with the small hypopygium turned upwards.

Mycetophilinae.

Palaeoepicypta Meunier, 1904.

Proposed for *P. longicalcar* Meun. I have examined the type ♀, and also a second ♀, which appears to belong to the same species, in the Geological Department of the British Museum.

The species is not at all related to *Epicypta* as suggested by the name, but on the other hand shows all the essential features of *Rhymosia* Winn. or *Brachypeza* Winn., two recent genera which are not very well distinguished. *Palaeoepicypta* must be placed as a synonym of one of these, say *Rhymosia* **syn. n.** *P. longicalcar* has short discal bristles posteriorly on mesonotum (none on front half); scutellum with four long bristles; anepisternite with many very short hairs above; wings with *CuP* long and strong, *An* fairly distinct but not long.

References.

Johannsen, O. A., 1909, Mycetophilidae *in Genera Insectorum*, **93.**
Loew, H., 1850, *Ueber den Bernstein und die Bernsteinfauna* (*Dipteren*).
Meunier, F., 1894 [Note], *Bull. Soc. ent. Fr.* **1894** : cxi.
——, 1897, Sur un Mycétophilide de l'ambre tertiaire. *Bull. Soc. ent. Fr.* **1897** : 218.
——, 1904, Monographie des . . . Mycetophilidae . . . de l'ambre de la Baltique. *Ann. Soc. Sci. Bruxelles*, **28** : 12–92.
——, 1923, Nouvelle contribution à la monographie des Mycetophilidae . . . de l'ambre de la Baltique. *Rev. Sci. Bourbonnais*, **1923** : 25.

Book Notice.

German-English science dictionary for Students in the Agricultural, Biological, and Physical Sciences. By L. DeVries. sm. 8vo. London (McGraw-Hill), 1939. Price 19*s.* 9*d.* Pp. x + 473, printed in double column.

This neat volume is of a handy size for use and transport and is bound in flexible boards. It is produced by the Professor of modern languages at Iowa State College with the collaboration of members of the Graduate Faculty. It contains some 48,000 entries.

The presentation is clear, since the type used for the words indexed is clarendon black-faced and it stands out plainly from the text. Nouns are all given with initial capital letters to distinguish them from adjectives and many of the well-known German compound words are included, but a warning is given in the introduction to the reader to look for the short root stem if the word he seeks is not to be found under the initial sought.

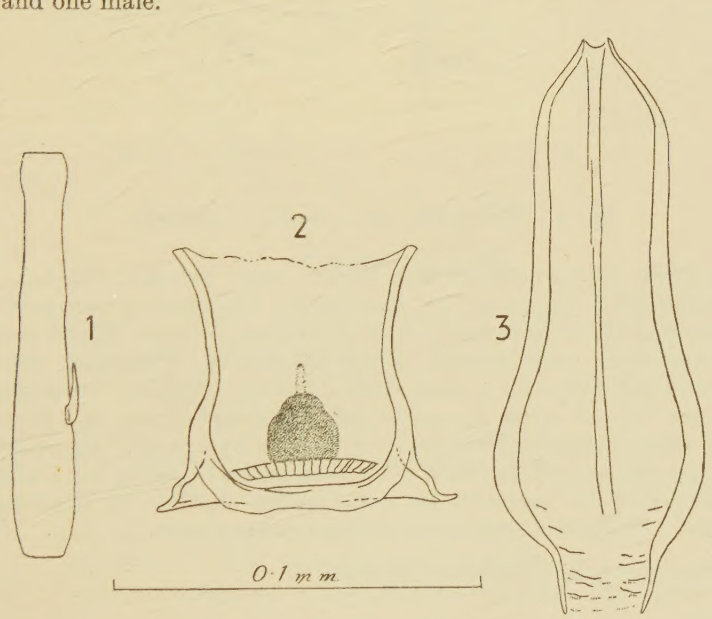
THE MALE OF *PHLEBOTOMUS AFFINIS* THEODOR (DIPTERA)

By D. J. Lewis, F.R.E.S., and R. Kirk.

(*Stack Medical Research Laboratories, Khartoum, Anglo-Egyptian Sudan.*)

The species *Phlebotomus affinis* was described by Theodor (1933) from a single female found in a collection made in 1932 by Major R. J. Rosie, R.A.M.C., in the Mongalla district of the Anglo-Egyptian Sudan. As far as we are aware, no further specimens have been recorded.

In a survey of Sudan sandflies, carried out during the past two years, the species has been identified on two occasions in collections sent to us from El Fasher in the province of Darfur by Mohamed Effendi Saleh, of the Sudan Medical Service. El Fasher is some 730 miles distant from Mongalla as the crow flies, and the climatic conditions in both places are very different. On the first occasion one female only was found in a collection containing various other species, made in January 1939. A collection made subsequently in October 1939 was found to consist entirely of *P. affinis* and contained five females and one male.



Figs. 1–3.—*Phlebotomus affinis* Theod. ♂; 1. 4th segment of antenna; 2. buccal cavity; 3. pharynx.

All the females which have been examined correspond closely with Theodor's description of *P. affinis* and there is little doubt that the single male belongs to the same species. It was found in a collection consisting otherwise only of female *P. affinis* and resembles closely the males of the most nearly related African species, *P. thomsoni* Theod. and *P. matadiensis* Theod., from both of which it can be distinguished by the arrangement of the buccal teeth and by the position of the small seta on the terminal segment of the superior clasper.

Phlebotomus affinis Theodor, ♂.

Hind leg: length, 3·09 mm. *Wing:* length, 1·77 mm.; breadth, 0·42 mm.; alar index (α/β) 0·69; δ, 0·10 mm. *Antenna:* third segment (0·22 mm.) longer than epipharynx $\left(\frac{\text{A III}}{\text{E}} = 1{\cdot}3\right)$. III slightly longer than IV + V. Fourth segment, length 0·10 mm. One geniculate spine on each of segments III to XV $\left(\text{formula } \frac{\text{I}}{\text{III–XV}}\right)$. Spine

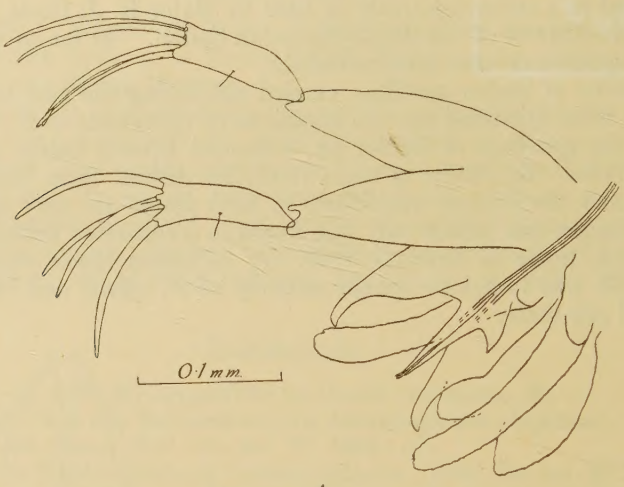


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Fig. 4.—*Phlebotomus affinis* Theod., ♂ terminalia.

on fourth segment less than one-fifth of its length. *Palp:* formula 1, 2, 3, 4, 5. Relative lengths of segments, 1, 2·2, 3·4, 4, 7·5. *Buccal cavity:* the armature consists of a straight row of approximately 16 blunt teeth, of which the inner teeth are parallel to each other and the outer teeth incline inwards towards the mid-line. Pigmented area compact, rounded anteriorly except for a small anterior process. *Pharynx:* lamp glass-shaped, posterior part 1·5 times width of anterior part. Armature consists of a few transverse ridges and minute spicules. *Terminalia:* of the *P. minutus* type. The apical segment of the superior clasper half the length of the basal segment, bearing four terminal spines and a small ventral seta approximately at the middle. Intermediate appendage moderately hooked. Penis small, slender and tapering to a sharp point.

The specimen is in the British Museum.

Reference.

Theodor, O., 1933, Some African Sandflies. *Bull. ent. Res.* **24**: 537–547.

Book Notice.

Nomenclator Zoologicus.

The second volume containing entries beginning with the letters D–L has appeared. Volumes 3 and 4 are in active preparation.